



#9

SEQUENCE LISTING

<110> Lukyanov, Sergey M.
Fradkov, Arcady F.
Labas, Yulii A.
Matz, Mikhail V.
Terskikh, Alexey

<120> Novel Chromophores/Fluorophores and
Methods for Using the Same

<130> CLON-035CIP

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<141> 2001-12-04

<150> 09/120,330
<151> 1998-12-11

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<212> DNA
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gacataactat ctacagtgtt caagtatgga aatcgatgtt ttactgcgtt ttctaccagt 240
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<211> 229

<212> PRT

<213> anemonia majano

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Thr	Val	Phe	Lys	Tyr	Gly	Asn	Arg	Cys	Phe	Thr	Ala	Tyr	Pro	Thr	Ser
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Trp	Asp	Pro	Ser	Phe	Glu	Lys	Met	Thr	Val	Cys	Asp	Gly	Ile	Leu	Lys
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Gly	Asp	Val	Thr	Ala	Phe	Leu	Met	Leu	Gln	Gly	Gly	Asn	Tyr	Arg	
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Cys	Gln	Phe	His	Thr	Ser	Tyr	Lys	Thr	Lys	Lys	Pro	Val	Thr	Met	Pro
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Pro	Asn	His	Ala	Val	Glu	His	Arg	Ile	Ala	Arg	Thr	Asp	Leu	Asp	Lys
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<213> Clavularia species

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gagaagacat tgagaatacc aaaagctcta accaccatgg gtgtgattaa accagacatg 300
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cgtgtatggag tgctggtcgg agatattagc cattctctgt tgctggaggg aggtggccat 780
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<212> PRT
<213> Clavularia species

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Thr Leu Arg Ile Pro Lys Ala Leu Thr Thr Met Gly Val Ile Lys Pro
 35          40                   45
Asp Met Lys Ile Lys Leu Lys Met Glu Gly Asn Val Asn Gly His Ala
 50          55                   60
Phe Val Ile Glu Gly Glu Gly Lys Pro Tyr Asp Gly Thr His
 65          70                   75                  80
Thr Leu Asn Leu Glu Val Lys Glu Gly Ala Pro Leu Pro Phe Ser Tyr
 85          90                   95
Asp Ile Leu Ser Asn Ala Phe Gln Tyr Gly Asn Arg Ala Leu Thr Lys
100          105                  110
Tyr Pro Asp Asp Ile Ala Asp Tyr Phe Lys Gln Ser Phe Pro Glu Gly
115          120                  125
Tyr Ser Trp Glu Arg Thr Met Thr Phe Glu Asp Lys Gly Ile Val Lys
130          135                  140
Val Lys Ser Asp Ile Ser Met Glu Glu Asp Ser Phe Ile Tyr Glu Ile
145          150                  155                  160

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Arg Phe Asp Gly Met Asn Phe Pro Pro Asn Gly Pro Val Met Gln Lys
165 170 175
Lys Thr Leu Lys Trp Glu Pro Ser Thr Glu Ile Met Tyr Val Arg Asp
180 185 190
Gly Val Leu Val Gly Asp Ile Ser His Ser Leu Leu Leu Glu Gly Gly
195 200 205
Gly His Tyr Arg Cys Asp Phe Lys Ser Ile Tyr Lys Ala Lys Lys Val
210 215 220
Val Lys Leu Pro Asp Tyr His Phe Val Asp His Arg Ile Glu Ile Leu
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Ala Arg Tyr Ser Leu Leu Pro Ser Gln Ala
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<211> 693
<212> DNA
<213> Zoanthus species

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aaacaggcta ttaatctgtg tgggtcgaa ggtggaccat tgccatttgc cgaagacata 180
ttgtcagctg ccttatgtt cggaaacagg gtttcactg aatatcctca agacatagct 240
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gatggagcag tttgcatatg taatgcagat ataacagtga gtgttgaaga aaactgcatg 360
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atgacagata actgggagcc atcctgcgag aagatcatac cagtaccaa gcagggata 480
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<211> 231
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<213> Zoanthus species

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Gly Ile Gly Tyr Pro Phe Lys Gly Lys Gln Ala Ile Asn Leu Cys Val
35 40 45
Val Glu Gly Gly Pro Leu Pro Phe Ala Glu Asp Ile Leu Ser Ala Ala
50 55 60
Phe Asn Tyr Gly Asn Arg Val Phe Thr Glu Tyr Pro Gln Asp Ile Ala
65 70 75 80

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Phe	Leu	Phe	Glu	Asp	Gly	Ala	Val	Cys	Ile	Cys	Asn	Ala	Asp	Ile	Thr
							100		105					110	
Val	Ser	Val	Glu	Glu	Asn	Cys	Met	Tyr	His	Glu	Ser	Lys	Phe	Tyr	Gly
							115		120				125		
Val	Asn	Phe	Pro	Ala	Asp	Gly	Pro	Val	Met	Lys	Lys	Met	Thr	Asp	Asn
							130		135			140			
Trp	Glu	Pro	Ser	Cys	Glu	Lys	Ile	Ile	Pro	Val	Pro	Lys	Gln	Gly	Ile
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Leu	Lys	Gly	Asp	Val	Ser	Met	Tyr	Leu	Leu	Leu	Lys	Asp	Gly	Gly	Arg
							165		170				175		
Leu	Arg	Cys	Gln	Phe	Asp	Thr	Val	Tyr	Lys	Ala	Lys	Ser	Val	Pro	Arg
							180		185				190		
Lys	Met	Pro	Asp	Trp	His	Phe	Ile	Gln	His	Lys	Leu	Thr	Arg	Glu	Asp
							195		200				205		
Arg	Ser	Asp	Ala	Lys	Asn	Gln	Lys	Trp	His	Leu	Thr	Glu	His	Ala	Ile
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<213> Zoanthus species

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gaaacagact attaatctgt gtgtgatcga agggggacca ttgccattt ccgaagacat 240
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<210> 8
<211> 230
<212> PRT
<213> Zoanthus species

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		Ile	Thr
		Gly	Glu
	20	25	30
Gly	Ile	Gly	Tyr
		Pro	Phe
		Lys	Gly
		Gln	Thr
		Ile	Asn
		Leu	Cys
	35	40	45
Ile	Glu	Gly	Pro
		Leu	Pro
		Phe	Ser
		Glu	Asp
		Ile	Leu
		Ser	Ala
	50	55	60
Phe	Lys	Tyr	Gly
		Asp	Arg
		Ile	Phe
		Thr	Glu
		Tyr	Pro
		Gln	Asp
	65	70	75
Asp	Tyr	Phe	Lys
		Asn	Ser
		Cys	Pro
		Ala	Gly
		Tyr	Thr
		Trp	Gly
		Ser	Phe
	85	90	95
Leu	Phe	Glu	Asp
		Gly	Ala
		Val	Cys
		Ile	Cys
		Asn	Val
		Asp	Ile
	100	105	110
Ser	Val	Lys	Glu
		Asn	Cys
		Ile	Tyr
		His	Lys
		Ser	Ile
		Phe	Asn
		Gly	Met
	115	120	125
Asn	Phe	Pro	Ala
		Asp	Gly
		Pro	Val
		Met	Lys
		Lys	Met
	130	135	140
Glu	Ala	Ser	Cys
		Glu	Lys
		Ile	Met
		Pro	Val
		Pro	Lys
	145	150	155
Lys	Gly	Asp	Val
		Ser	Met
		Tyr	Leu
		Leu	Leu
		Lys	Asp
		Gly	Gly
	165	170	175
Arg	Cys	Gln	Phe
		Asp	Thr
		Thr	Val
		Tyr	Lys
		Ala	Lys
		Ser	Val
		Pro	Ser
	180	185	190
Met	Pro	Glu	Trp
		His	Phe
		Ile	Gln
		His	Lys
		Leu	Leu
		Arg	Glu
	195	200	205
Ser	Asp	Ala	Lys
		Asn	Gln
		Lys	Trp
		Gln	Leu
		Leu	Thr
		Glu	His
		Ala	Ile
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Phe	Pro	Ser	Ala
		Leu	Ala
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 <211> 850
 <212> DNA
 <213> Disosoma striata

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 ttgaaataaaa aggcaaagga aaagggaagc ctaatgaagg caccaataacc gtcacgctcg 180
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 aattcatgaa agttgaggag catgaaatcg ccgttgcacg ccaccatccg ctccaaagcc 720
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<211> 227

<212> PRT

<213> Discosoma striata

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35 40 45

Thr Lys Gly Gly Pro Leu Pro Phe Gly Trp His Ile Leu Cys Pro Gln
50 55 60

Phe Gln Tyr Gly Asn Lys Ala Phe Val His His Pro Asp Asp Ile Pro
65 70 75 80

Asp Tyr Leu Lys Leu Ser Phe Pro Glu Gly Tyr Thr Trp Glu Arg Ser
85 90 95

Met His Phe Glu Asp Gly Gly Leu Cys Cys Ile Thr Asn Asp Ile Ser
100 105 110

Leu Thr Gly Asn Cys Phe Asn Tyr Asp Ile Lys Phe Thr Gly Leu Asn
115 120 125

Phe Pro Pro Asn Gly Pro Val Val Gln Lys Lys Thr Thr Gly Trp Glu
130 135 140

Pro Ser Thr Glu Arg Leu Tyr Pro Arg Asp Gly Val Leu Ile Gly Asp
145 150 155 160

Ile His His Ala Leu Thr Val Glu Gly Gly His Tyr Val Cys Asp
165 170 175

Ile Lys Thr Val Tyr Arg Ala Lys Lys Pro Val Lys Met Pro Gly Tyr
180 185 190

His Tyr Val Asp Thr Lys Leu Val Ile Arg Ser Asn Asp Lys Glu Phe
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210 215 220

Gln Ser Gln

225

<210> 11

<211> 678

<212> DNA

<213> Discosoma species

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cacaataccg taaagcttaa ggtaaccaag gggggacctt tgccatttgc ttggatatt 180

ttgtcaccac aatttcagta tggaaagcaag gtatatgtca agcaccctgc cgacatacca 240

gactataaaa agctgtcatt tcctgaagga tttaaatggg aaagggtcat gaactttcaa 300

gacgggtggcg tcgttactgt aaccaggat tccagttgc aggatggctg tttcatctac 360
aaggtaagt tcattggcgt gaactttcct tccgatggac ctgttatgca aaagaagaca 420
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35 40 45
Thr Lys Gly Gly Pro Leu Pro Phe Ala Trp Asp Ile Leu Ser Pro Gln
50 55 60
Phe Gln Tyr Gly Ser Lys Val Tyr Val Lys His Pro Ala Asp Ile Pro
65 70 75 80
Asp Tyr Lys Lys Leu Ser Phe Pro Glu Gly Phe Lys Trp Glu Arg Val
85 90 95
Met Asn Phe Glu Asp Gly Gly Val Val Thr Val Thr Gln Asp Ser Ser
100 105 110
Leu Gln Asp Gly Cys Phe Ile Tyr Lys Val Lys Phe Ile Gly Val Asn
115 120 125
Phe Pro Ser Asp Gly Pro Val Met Gln Lys Lys Thr Met Gly Trp Glu
130 135 140
Ala Ser Thr Glu Arg Leu Tyr Pro Arg Asp Gly Val Leu Lys Gly Glu
145 150 155 160
Ile His Lys Ala Leu Lys Leu Lys Asp Gly Gly His Tyr Leu Val Glu
165 170 175
Phe Lys Ser Ile Tyr Met Ala Lys Lys Pro Val Gln Leu Pro Gly Tyr
180 185 190
Tyr Tyr Val Asp Ser Lys Leu Asp Ile Thr Ser His Asn Glu Asp Tyr
195 200 205
Thr Ile Val Glu Gln Tyr Glu Arg Thr Glu Gly Arg His His Leu Phe
210 215 220
Leu
225

<210> 13
<211> 696
<212> DNA
<213> Anemonia sulcata

<400> 13

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agttgtatgt acggtagtaa ggccttcatac aagtatgtgt caggaattcc tgactactc 240
aagcagtctt tccctgaagg ttttacttgg gaaagaacca caacctacga ggatggaggc 300
tttcttacag ctcatcgaa cacaagccta gatggagatt gcctcgatca caaggtcaag 360
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aaaaaaccag ctgctgcctt gaagatgcca ggatttcatt ttgaagatca tcgcacatcgag 600
ataatggagg aagttgagaa aggcaagtgc tataaacagt acgaagcagc agtgggcagg 660
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<210> 14

<211> 232

<212> PRT

<213> Anemonia sulcata

<400> 14

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Asn	Pro	Phe	Glu	Gly	Thr	Gln	Glu	Met	Lys	Ile	Glu	Val	Ile	Glu	Gly
								35		40			45		
Gly	Pro	Leu	Pro	Phe	Ala	Phe	His	Ile	Leu	Ser	Thr	Ser	Cys	Met	Tyr
								50		55			60		
Gly	Ser	Lys	Thr	Phe	Ile	Lys	Tyr	Val	Ser	Gly	Ile	Pro	Asp	Tyr	Phe
								65		70			75		80
Lys	Gln	Ser	Phe	Pro	Glu	Gly	Phe	Thr	Trp	Glu	Arg	Thr	Thr	Tyr	
								85		90			95		
Glu	Asp	Gly	Gly	Phe	Leu	Thr	Ala	His	Gln	Asp	Thr	Ser	Leu	Asp	Gly
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Asp	Cys	Leu	Val	Tyr	Lys	Val	Lys	Ile	Leu	Gly	Asn	Asn	Phe	Pro	Ala
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Asp	Gly	Pro	Val	Met	Gln	Asn	Lys	Ala	Gly	Arg	Trp	Glu	Pro	Ala	Thr
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Glu	Ile	Val	Tyr	Glu	Val	Asp	Gly	Val	Leu	Arg	Gly	Gln	Ser	Leu	Met
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Ala	Leu	Lys	Cys	Pro	Gly	Gly	Arg	His	Leu	Thr	Cys	His	Leu	His	Thr
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Thr	Tyr	Arg	Ser	Lys	Lys	Pro	Ala	Ala	Ala	Leu	Lys	Met	Pro	Gly	Phe
								180		185			190		
His	Phe	Glu	Asp	His	Arg	Ile	Glu	Ile	Met	Glu	Glu	Val	Glu	Lys	Gly
								195		200			205		
Lys	Cys	Tyr	Lys	Gln	Tyr	Glu	Ala	Ala	Val	Gly	Arg	Tyr	Cys	Asp	Ala
								210		215			220		
Ala	Pro	Ser	Lys	Leu	Gly	His	Asn								
								225		230					

<210> 15
 <211> 919
 <212> DNA
 <213> Discosoma species

<400> 15
 attcacctcg gtgatttcta agagaaagga tcaccatcaa gagaagagct gtaaaagtta 60
 atattttact gtacttctac cagcatgagt gcacttaaag aagaatgaa aatcaaccc 120
 acaatggaaag gtgttgttaa cgggcattcc tttaagatcc gtggggatgg aaaaggcaaa 180
 ccataccagg gatcacagga gttAACCTG acggtggtta aaggcggccc tctgccttc 240
 tcttatgata ttctgacaac gatgttcag tacggcaaca gggcattcgt aaactaccca 300
 gaggacatac cagatatttt caagcagacc tggtctggc ctaatgggg atattcctgg 360
 caaaggacca tgacttatga agacggaggc gtttgcactg ctacaagcaa catcagcgtg 420
 gttggcgaca ctttcaatta tgacattcac ttatgggg cgaatttcc tcttgatgg 480
 ccagtgtatgc agaaaagaac aatgaaatgg gaaccatcca ctgagataat gtttgaacgt 540
 gatggaaatgc tgaggggtga cattgccatg tctctgttgc tgaagggagg gggccattac 600
 cgatgtgatt ttgaaaactat ttataaaccc aataaggttg tcaagatgcc agattaccat 660
 tttgtggacc actgcattga gataacgagt caacaggatt attacaacgt ggtttagctg 720
 accgaggttg ctgaagcccc ctactctcg ctggagaaaa tcggcaaaatc aaaggcgtaa 780
 atccaagcaa tctaagaaaa caacaaggca ttaaaccgaa tcaccgttt gaattttcg 840
 ttcggaattt ctttgtaaaa ctaggttag aacgttcat ttcgctggac ttcttgact 900
 cagctgtaga caagaaaga 919

<210> 16
 <211> 231
 <212> PRT
 <213> Discosoma species

<400> 16
 Met Ser Ala Leu Lys Glu Glu Met Lys Ile Asn Leu Thr Met Glu Gly
 1 5 10 15
 Val Val Asn Gly Leu Pro Phe Lys Ile Arg Gly Asp Gly Lys Gly Lys
 20 25 30
 Pro Tyr Gln Gly Ser Gln Glu Leu Thr Leu Thr Val Val Lys Gly Gly
 35 40 45
 Pro Leu Pro Phe Ser Tyr Asp Ile Leu Thr Thr Met Phe Gln Tyr Gly
 50 55 60
 Asn Arg Ala Phe Val Asn Tyr Pro Glu Asp Ile Pro Asp Ile Phe Lys
 65 70 75 80
 Gln Thr Cys Ser Gly Pro Asn Gly Gly Tyr Ser Trp Gln Arg Thr Met
 85 90 95
 Thr Tyr Glu Asp Gly Gly Val Cys Thr Ala Thr Ser Asn Ile Ser Val
 100 105 110
 Val Gly Asp Thr Phe Asn Tyr Asp Ile His Phe Met Gly Ala Asn Phe
 115 120 125
 Pro Leu Asp Gly Pro Val Met Gln Lys Arg Thr Met Lys Trp Glu Pro
 130 135 140
 Ser Thr Glu Ile Met Phe Glu Arg Asp Gly Met Leu Arg Gly Asp Ile
 145 150 155 160
 Ala Met Ser Leu Leu Lys Gly Gly His Tyr Arg Cys Asp Phe
 165 170 175

Glu Thr Ile Tyr Lys Pro Asn Lys Val Val Lys Met Pro Asp Tyr His
 180 185 190
 Phe Val Asp His Cys Ile Glu Ile Thr Ser Gln Gln Asp Tyr Tyr Asn
 195 200 205
 Val Val Glu Leu Thr Glu Val Ala Glu Ala Arg Tyr Ser Ser Leu Glu
 210 215 220
 Lys Ile Gly Lys Ser Lys Ala
 225 230

<210> 17
 <211> 876
 <212> DNA
 <213> Discosoma species

<400> 17
 agtttcagcc agtgacaggg tgagctgcc a ggtattctaa caagatgagt tttccaaga 60
 atgtgatcaa ggagttcatg aggttcaagg ttcttatgga aggaacggc aatgggcacg 120
 agtttgaat aaaaggcgaa ggtgaaggga ggcottacga aggtcactgt tccgtaaagc 180
 ttatgttaac caagggtgga cctttccat ttgttttga tattttgtca ccacaatttc 240
 agtatggaag caaggtatat gtcaaaacacc ctggccgacat accagactat aaaaagctgt 300
 catttcctga gggatttaaa tgggaaaggg tcatgaacct tgaagacggt ggcgtggta 360
 ctgtatccca agattccagt ttgaaagacg gctgtttcat ctacgaggc aagttcattt 420
 gggtaactt tccttctgat ggacctgttga tgcagaggag gacacggggc tgggaaagcca 480
 gctctgagcg tttgtatccct cgtgatgggg tgctgaaagg agacatccat atggctctga 540
 ggctggaagg aggccggccat tacctcggtt aattcaaaaag tatttacatg gtaaagaagc 600
 cttcagtgc a ttgccaggc tactattatg ttgactccaa actggatatg acgagccaca 660
 acgaagatta cacagtcgtt gagcagtagt aaaaaaccca gggacgcccc catccgttca 720
 ttaagccctc gcagtgaact cggctcagtc atggatttagc ggtaatggcc acaaaaaggca 780
 cgatgatcgt tttttagaa tgcagccaaa aattgaaggt tatgacagta gaaataacaag 840
 caacaggcatt gcttattaa acatgtattt gaaaaac 876

<210> 18
 <211> 230
 <212> PRT
 <213> Discosoma species

<400> 18
 Met Ser Cys Ser Lys Asn Val Ile Lys Glu Phe Met Arg Phe Lys Val
 1 5 10 15
 Arg Met Glu Gly Thr Val Asn Gly His Glu Phe Glu Ile Lys Gly Glu
 20 25 30
 Gly Glu Gly Arg Pro Tyr Glu Gly His Cys Ser Val Lys Leu Met Val
 35 40 45
 Thr Lys Gly Gly Pro Leu Pro Phe Ala Phe Asp Ile Leu Ser Pro Gln
 50 55 60
 Phe Gln Tyr Gly Ser Lys Val Tyr Val Lys His Pro Ala Asp Ile Pro
 65 70 75 80
 Asp Tyr Lys Lys Leu Ser Phe Pro Glu Gly Phe Lys Trp Glu Arg Val
 85 90 95
 Met Asn Phe Glu Asp Gly Gly Val Val Thr Val Ser Gln Asp Ser Ser

100	105	110
Leu Lys Asp Gly Cys Phe Ile Tyr Glu Val Lys Phe Ile Gly Val Asn		
115	120	125
Phe Pro Ser Asp Gly Pro Val Met Gln Arg Arg Thr Arg Gly Trp Glu		
130	135	140
Ala Ser Ser Glu Arg Leu Tyr Pro Arg Asp Gly Val Leu Lys Gly Asp		
145	150	155
Ile His Met Ala Leu Arg Leu Glu Gly Gly His Tyr Leu Val Glu		
165	170	175
Phe Lys Ser Ile Tyr Met Val Lys Lys Pro Ser Val Gln Leu Pro Gly		
180	185	190
Tyr Tyr Tyr Val Asp Ser Lys Leu Asp Met Thr Ser His Asn Glu Asp		
195	200	205
Tyr Thr Val Val Glu Gln Tyr Glu Lys Thr Gln Gly Arg His His Pro		
210	215	220
Phe Ile Lys Pro Leu Gln		
225	230	

<210> 19		
<211> 26		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> Primer		
<400> 19		
atgtgcaata ccaacatgtc tgtacc		26
<210> 20		
<211> 21		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> Primer		
<400> 20		
ctagggaaaa taagtttagca c		21
<210> 21		
<211> 41		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> Primer		
<400> 21		
ggaattccag ccatggtgta caataccaac atgtctgtac c		41

<210> 22		
<211> 26		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> Primer		
<400> 22		
tccccccgggg ggaaataagt tagcac		26
<210> 23		
<211> 31		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> Primer		
<400> 23		
acatggatcc aggtcttcca agaatgttat c		31
<210> 24		
<211> 26		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> Primer		
<400> 24		
tagtactcga gccaaaggta gcctta		26
<210> 25		
<211> 30		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> Primer		
<400> 25		
acatggatcc agttgttcca agaatgtgat		30
<210> 26		
<211> 27		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> Primer		

<400> 26
 tagtactcga ggccattacc gctaattc 27

<210> 27
 <211> 690
 <212> DNA
 <213> Anemonia majano

<400> 27
 atggccctgt ccaacgagtt catcgccgac gacatgaaga tgacctacca catggacggc 60
 tgcgtgaacg gccactactt caccgtgaag ggcgaggggca gcggcaagcc ctacgagggc 120
 acccagacct ccaccccaa ggtgaccatg gccaacggcg gccccctggc ctttccttc 180
 gacatcctgt ccaccgtgtt catgtacggc aaccgctgct tcaccgccta ccccaccagc 240
 atgcccgaact acttcaagca ggccttcccc gacggcatgt cctacgagag aacccttcacc 300
 tacgaggacg gggcggtggc caccgcacg tggagatca gcctgaaggg caactgcttc 360
 gaggcacaagt ccaccccaa cggcgtgaac ttccccggc acggcccccgt gatggccaag 420
 aagaccaccc gctgggaccc ctccttcgag aagatgaccg tgcgtacccg catttgaag 480
 ggcgacgtga cccgccttcct gatgctgcag ggcggcggca actacagatg ccagttccac 540
 acctcctaca agaccaagaa gcccgtgacc atgcccccca accacgttgtt ggagcaccgc 600
 atgcccaagaa ccgacctgga caagggcggc aacagcgtgc agctgaccga gcacgcccgtg 660
 gcccacatca cctccgttgtt gcccctctga 690

<210> 28
 <211> 229
 <212> PRT
 <213> Anemonia majano

<400> 28
 Met Ala Leu Ser Asn Glu Phe Ile Gly Asp Asp Met Lys Met Thr Tyr
 1 5 10 15
 His Met Asp Gly Cys Val Asn Gly His Tyr Phe Thr Val Lys Gly Glu
 20 25 30
 Gly Ser Gly Lys Pro Tyr Glu Gly Thr Gln Thr Ser Thr Phe Lys Val
 35 40 45
 Thr Met Ala Asn Gly Gly Pro Leu Ala Phe Ser Phe Asp Ile Leu Ser
 50 55 60
 Thr Val Phe Met Tyr Gly Asn Arg Cys Phe Thr Ala Tyr Pro Thr Ser
 65 70 75 80
 Met Pro Asp Tyr Phe Lys Gln Ala Phe Pro Asp Gly Met Ser Tyr Glu
 85 90 95
 Arg Thr Phe Thr Tyr Glu Asp Gly Gly Val Ala Thr Ala Ser Trp Glu
 100 105 110
 Ile Ser Leu Lys Gly Asn Cys Phe Glu His Lys Ser Thr Phe His Gly
 115 120 125
 Val Asn Phe Pro Ala Asp Gly Pro Val Met Ala Lys Lys Thr Thr Gly
 130 135 140
 Trp Asp Pro Ser Phe Glu Lys Met Thr Val Cys Asp Gly Ile Leu Lys
 145 150 155 160
 Gly Asp Val Thr Ala Phe Leu Met Leu Gln Gly Gly Asn Tyr Arg
 165 170 175
 Cys Gln Phe His Thr Ser Tyr Lys Thr Lys Lys Pro Val Thr Met Pro

180	185	190
Pro Asn His Val Val Glu His Arg Ile Ala Arg Thr Asp Leu Asp Lys		
195	200	205
Gly Gly Asn Ser Val Gln Leu Thr Glu His Ala Val Ala His Ile Thr		
210	215	220
Ser Val Val Pro Phe		
225		

<210> 29
<211> 705
<212> DNA
<213> Zoanthus species

<400> 29
ggatccgctc agtcagagca cggctctaaca gaagaaatga caatgaaata ccgtatggaa 60
gggtgcgtcg atggacataa atttgtgatc acgggagagg gcattggata tccgttcaaa 120
ggaaaacagg ctattaatct gtgtgtggtc gaaggtggac cattgccatt tgccgaagac 180
atattgtcag ctgcctttat gtacggaaac agggtttca ctgaatatcc tcaagacata 240
gttactatt tcaagaactc gtgtcctgct ggatatacat gggacaggc ttttctttt 300
gaggatggag cagtttgcatt atgtaatgca gatataacag tgagtgttga agaaaaactgc 360
atgtatcatg agtccaaatt ctatggagtg aattttcctg ctgatggacc tggatgaaa 420
aagatgacag ataactggga gccatcctgc gagaagatca taccagtacc taagcagggg 480
atattgaaag gggatgtctc catgtaccc tccttgaagg atggtgggcg ttacggtgc 540
caattcgcaca cagtttacaa agcaaagtct gtgccaagaa agatgccgga ctggcacttc 600
atccagcata agctcacccg tgaagaccgc agcgtatgcta agaatcagaa atggatctg 660
acagaacatg ctattgcattt cggatctgca ttgccctgaa agctt 705

<210> 30
<211> 230
<212> PRT
<213> Zoanthus species

<400> 30
Ala Gln Ser Glu His Gly Leu Thr Glu Glu Met Thr Met Lys Tyr Arg
1 5 10 15
Met Glu Gly Cys Val Asp Gly His Lys Phe Val Ile Thr Gly Glu Gly
20 25 30
Ile Gly Tyr Pro Phe Lys Gly Lys Gln Ala Ile Asn Leu Cys Val Val
35 40 45
Glu Gly Pro Leu Pro Phe Ala Glu Asp Ile Leu Ser Ala Ala Phe
50 55 60
Met Tyr Gly Asn Arg Val Phe Thr Glu Tyr Pro Gln Asp Ile Val Asp
65 70 75 80
Tyr Phe Lys Asn Ser Cys Pro Ala Gly Tyr Thr Trp Asp Arg Ser Phe
85 90 95
Leu Phe Glu Asp Gly Ala Val Cys Ile Cys Asn Ala Asp Ile Thr Val
100 105 110
Ser Val Glu Glu Asn Cys Met Tyr His Glu Ser Lys Phe Tyr Gly Val
115 120 125
Asn Phe Pro Ala Asp Gly Pro Val Met Lys Lys Met Thr Asp Asn Trp

130	135	140
Glu Pro Ser Cys Glu Lys Ile Ile Pro Val Pro Lys Gln Gly Ile Leu		
145	150	155
Lys Gly Asp Val Ser Met Tyr Leu Leu Leu Lys Asp Gly Gly Arg Leu		160
165	170	175
Arg Cys Gln Phe Asp Thr Val Tyr Lys Ala Lys Ser Val Pro Arg Lys		
180	185	190
Met Pro Asp Trp His Phe Ile Gln His Lys Leu Thr Arg Glu Asp Arg		
195	200	205
Ser Asp Ala Lys Asn Gln Lys Trp His Leu Thr Glu His Ala Ile Ala		
210	215	220
Ser Gly Ser Ala Leu Pro		
225	230	

<210> 31
<211> 231
<212> PRT
<213> Zoanthus species

<400> 31			
Met Ala Gln Ser Lys His Gly Leu Thr Lys Glu Met Thr Met Lys Tyr			
1	5	10	15
Arg Met Glu Gly Cys Val Asp Gly His Lys Phe Val Ile Thr Gly Glu			
20	25	30	
Gly Ile Gly Tyr Pro Phe Lys Gly Lys Gln Ala Ile Asn Leu Cys Val			
35	40	45	
Val Glu Gly Gly Pro Leu Pro Phe Ala Glu Asp Ile Leu Ser Ala Gly			
50	55	60	
Phe Lys Tyr Gly Asp Arg Val Phe Thr Glu Tyr Pro Gln Asp Ile Val			
65	70	75	80
Asp Tyr Phe Lys Asn Ser Cys Pro Ala Gly Tyr Thr Trp Asp Arg Ser			
85	90	95	
Phe Leu Phe Glu Asp Gly Ala Val Cys Ile Cys Asn Ala Asp Ile Thr			
100	105	110	
Val Ser Val Glu Glu Asn Cys Met Tyr His Glu Ser Lys Phe Tyr Gly			
115	120	125	
Val Asn Phe Pro Ala Asp Gly Pro Val Met Lys Lys Met Thr Asp Asn			
130	135	140	
Trp Glu Pro Ser Cys Glu Lys Ile Ile Pro Val Pro Lys Gln Gly Ile			
145	150	155	160
Leu Lys Gly Asp Val Ser Met Tyr Leu Leu Leu Lys Asp Gly Gly Arg			
165	170	175	
Leu Arg Cys Gln Phe Asp Thr Val Tyr Lys Ala Lys Ser Val Pro Arg			
180	185	190	
Lys Met Pro Asp Trp His Phe Ile Gln His Lys Leu Thr Arg Glu Asp			
195	200	205	
Arg Ser Asp Ala Lys Asn Gln Lys Trp His Leu Thr Glu His Ala Ile			
210	215	220	
Ala Ser Gly Ser Ala Leu Pro			
225	230		

<210> 32
<211> 231
<212> PRT
<213> Zoanthus species

<400> 32

Met	Ala	Gln	Ser	Lys	His	Gly	Leu	Thr	Lys	Glu	Met	Thr	Met	Lys	Tyr
1				5				10					15		
Arg	Met	Glu	Gly	Cys	Val	Asp	Gly	His	Lys	Phe	Val	Ile	Thr	Gly	Glu
				20				25					30		
Gly	Ile	Gly	Tyr	Pro	Phe	Lys	Gly	Lys	Gln	Ala	Ile	Asn	Leu	Cys	Val
				35				40				45			
Val	Glu	Gly	Gly	Pro	Leu	Pro	Phe	Ala	Glu	Asp	Ile	Leu	Ser	Ala	Gly
	50				55						60				
Phe	Lys	Tyr	Gly	Asp	Arg	Val	Phe	Thr	Glu	Tyr	Pro	Gln	Asp	Ile	Val
	65				70				75			80			
Asp	Tyr	Phe	Lys	Asn	Ser	Cys	Pro	Ala	Gly	Tyr	Thr	Trp	Asn	Arg	Ser
				85				90				95			
Phe	Leu	Phe	Glu	Asp	Gly	Ala	Val	Cys	Ile	Cys	Asn	Ala	Asp	Ile	Thr
				100				105				110			
Val	Ser	Val	Glu	Glu	Asn	Cys	Val	Tyr	His	Glu	Ser	Lys	Phe	Tyr	Gly
				115				120				125			
Val	Asn	Phe	Pro	Ala	Asp	Gly	Pro	Val	Met	Lys	Lys	Met	Thr	Asp	Asn
				130				135				140			
Trp	Glu	Pro	Ser	Cys	Glu	Lys	Ile	Ile	Pro	Val	Pro	Arg	Gln	Gly	Ile
	145				150				155				160		
Leu	Lys	Gly	Asp	Val	Ser	Met	Tyr	Leu	Leu	Leu	Lys	Asp	Gly	Gly	Arg
				165				170				175			
Leu	Arg	Cys	Gln	Phe	Asp	Thr	Val	Tyr	Lys	Ala	Lys	Ser	Val	Pro	Arg
				180				185				190			
Lys	Met	Pro	Asp	Trp	His	Phe	Ile	Gln	His	Lys	Leu	Thr	Arg	Glu	Asp
				195				200				205			
Arg	Ser	Asp	Ala	Lys	Asn	Gln	Lys	Trp	His	Leu	Thr	Glu	His	Ala	Ile
				210				215				220			
Ala	Ser	Gly	Ser	Ala	Leu	Ser									
				225				230							

<210> 33
<211> 657
<212> DNA
<213> Zoanthus species

<400> 33

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tacccttca	agggcaagca	gaccatcaac	ctgtcggtga	tcgagggcgg	ccccctgtccc	120
ttcagcgagg	acatcctgag	cggccggcttc	aagtacggcg	accggatctt	caccgagtgac	180
ccccaggaca	tcgtggacta	tttcaagaac	agctgtccccg	ccggctacac	ctggggccgg	240
agtttcctgt	tcgaggacgg	cggccgtgtgc	atctgtaacg	tggacatcac	cgtgagcgtg	300
aaggagaact	gcatctacca	caagagcata	ttcaacggcg	tgaacttccc	cggccgacggc	360

cccggtatga agaagatgac caccaactgg gaggccagct gcgagaagat catgcccgtg 420
cctaaggcagg gcattctgaa gggcgacgtg agcatgtacc tgctgctgaa ggacggcgcc 480
cggtaccggt gccagttcga caccgtgtac aaggccaaga gcgtgcccag caagatgcc 540
gagtggcact tcattccagca caagctgctg cgggaggacc ggagcgacgc caagaaccag 600
aagtggcagc tgaccgagca cgccatcgcc ttccccagcg ccctggcctg aaagctt 657

<210> 34

<211> 230

<212> PRT

<213> Zoanthus species

<400> 34

Ala His Ser Glu His Gly Leu Thr Glu Glu Met Thr Met Lys Tyr His
1 5 10 15

Met Glu Gly Cys Val Asn Gly His Lys Phe Val Ile Thr Gly Glu Gly
20 25 30

Ile Gly Tyr Pro Phe Lys Gly Lys Gln Thr Ile Asn Leu Cys Val Ile
35 40 45

Glu Gly Gly Pro Leu Pro Phe Ser Glu Asp Ile Leu Ser Ala Gly Phe
50 55 60

Lys Tyr Gly Asp Arg Ile Phe Thr Glu Tyr Pro Gln Asp Ile Val Asp
65 70 75 80

Tyr Phe Lys Asn Ser Cys Pro Ala Gly Tyr Thr Trp Gly Arg Ser Phe
85 90 95

Leu Phe Glu Asp Gly Ala Val Cys Ile Cys Asn Val Asp Ile Thr Val
100 105 110

Ser Val Lys Glu Asn Cys Ile Tyr His Lys Ser Ile Phe Asn Gly Val
115 120 125

Asn Phe Pro Ala Asp Gly Pro Val Met Lys Lys Met Thr Thr Asn Trp
130 135 140

Glu Ala Ser Cys Glu Lys Ile Met Pro Val Pro Lys Gln Gly Ile Leu
145 150 155 160

Lys Gly Asp Val Ser Met Tyr Leu Leu Leu Lys Asp Gly Gly Arg Tyr
165 170 175

Arg Cys Gln Phe Asp Thr Val Tyr Lys Ala Lys Ser Val Pro Ser Lys
180 185 190

Met Pro Glu Trp His Phe Ile Gln His Lys Leu Leu Arg Glu Asp Arg
195 200 205

Ser Asp Ala Lys Asn Gln Lys Trp Gln Leu Thr Glu His Ala Ile Ala
210 215 220

Phe Pro Ser Ala Leu Ala
225 230

<210> 35

<211> 681

<212> DNA

<213> Discosoma species

<400> 35

atgggtcgct cctccaagaa cgtcatcaag gagttcatgc gcttcaaggt gcgcatggag 60

ggcacccgtga acggccacga gttcgagatc gagggcgagg gcgagggccg cccctacgag 120
ggccacaaca ccgtgaagct gaaggtgacc aaggcgcc ccctgcctt cgccctggac 180
atccctgtccc cccagttcca gtacggctcc aaggtgtacg tgaagcaccc cgccgacatc 240
cccgactaca agaagctgtc cttccccgag ggcttcaagt gggagcgcgt gatgaacttc 300
gaggacggcg gcgtgggtgac cgtgacccaa gactcctccc tgccaggacgg ctgcttcattc 360
tacaagggtga agttcatcggt cgtgaacttc ccctccgacg gccccgttaat gcagaagaag 420
accatgggct gggaggcctc caccgagcgc ctgtacccccc gcgacggcgt gctgaaggc 480
gagatccaca agggccctgaa gctgaaggac ggcggccact acctgggtgga gttcaagtcc 540
atctacatgg ccaagaagcc cgtgcagctg cccggctact actacgtgga ctccaagctg 600
gacatcacct cccacaacga ggactacacc atcgtggagc agtacgagcgc caccgagggc 660
cgccaccacc tgttcctgtaa g 681

<210> 36

<211> 678

<212> DNA

<213> Discosoma species

<400> 36

atggcctcct ccgagaacgt catcaccggag ttcatgcgt tcaagggtgcg catggaggc 60
accgtgaacg gccacagttt cgagatcgag ggcgagggcg agggccgccc ctacgaggc 120
cacaacacccg tgaagttgaa ggtgaccaag ggcggccccc tgcccttcgc ctggacatc 180
ctgtcccccc agttccagta cggctccaag gtgtacgtga agcaccggcgc cgacatcccc 240
gactacaaga agctgtcctt ccccgagggc ttcaagtggg agcgcgtat gaaatccgag 300
gacggcggcg tggcgaccgt gacccagac tcctccctgc aggacggctg ctcatctac 360
aaggtgaagt tcatcggtgt gaaatcccc tccgacggcc cccgtatgca gaagaagacc 420
atgggctggg aggccctccac cgagcgcctg taccggcgc acggcgtgt gaaaggcggag 480
atccacaagg ccctgaagct gaaggacggc ggccactacc tggtgaggtt caagtccatc 540
tacatggcca agaagcccggt gcagctgccc ggctactact acgtggacac caagctggac 600
atcacccccc acaacgagga ctacaccatc gtggagcagt acgagcgcac cgagggccgc 660
caccacctgt tcctgtaa 678

<210> 37

<211> 681

<212> DNA

<213> Discosoma species

<400> 37

atggtgcgtc cctccaagaa cgtcatcaag gagttcatgc gcttcaaggt ggcgcattggag 60
ggcacccgtga acggccacga gttcgagatc gagggcgagg gcgagggccg cccctacgag 120
ggccacaaca ccgtgaagct gaaggtgacc aaggcgcc ccctgcctt cgccctggac 180
atccctgtccc cccagttcca gtacggctcc aaggtgtacg tgaagcaccc cgccgacatc 240
cccgactaca agaagctgtc cttccccgag ggcttcaagt gggagcgcgt gatgaacttc 300
gaggacggcg gcgtggcgac cgtgacccaa gactcctccc tgccaggacgg ctgcttcattc 360
tacaagggtga agttcatcggt cgtgaacttc ccctccgacg gccccgttaat gcagaagaag 420
accatgggct gggaggcctc caccgagcgc ctgtacccccc gcgacggcgt gctgaaggc 480
gagacccaca agggccctgaa gctgaaggac ggcggccact acctgggtgga gttcaagtcc 540
atctacatgg ccaagaagcc cgtgcagctg cccggctact actacgtgga cgccaagctg 600
gacatcacct cccacaacga ggactacacc atcgtggagc agtacgagcgc caccgagggc 660
cgccaccacc tgttcctgtaa g 681

<210> 38

<211> 675
<212> DNA
<213> Discosoma species

<400> 38
atggcctcct ccgagaacgt catcaccgag ttcatgcgt tcaagggtcg catggaggc 60
accgtgaacg gccacgagtt cgagatcgag ggcgagggcg agggccgccc ctacgaggc 120
cacaacacccg tgaagctgaa ggtgaccaag ggccccccccc tgcccttcgc ctggacatc 180
ctgtcccccc agtccagta cggctccaag gtgtacgtga agcaccccgcc cgacatcccc 240
gactacaaga agctgtcctt cccccgaggc ttcaagtggg agcgcgtgtat gaacttcgag 300
gacggcggcg tggcgaccgt gacccagac tcctccctgc aggacggctg cttcatctac 360
aaggtaagt tcatcgccgt gaacttcccc tccgacggcc ccgtgatgca gaagaagacc 420
atgggctggg aggccctccac cgagcgcctg taccggcg acggcgtgtat gaagggcgag 480
acccacaagg ccctgaagct gaaggacggc ggccactacc tggtgagtt caagtccatc 540
tacatggcca agaagccgt gcagctgccc ggctactact acgtggacgc caagctggac 600
atcacctccc acaaaggaga ctacaccatc gtggagcagt acgagcgcac cgagggccgc 660
caccacctgt tcctg 675

<210> 39
<211> 707
<212> DNA
<213> Anemonia sulcata

<400> 39
ggatccgcct ccctgctgac cgagaccatg cccttcagga ccaccatcga gggcacccgt 60
aacggccact acttcaagtg cacccggcaag ggcgagggca accccctcga gggcacccag 120
gagatgaaga tcgaggtat cgagggcgcc cccctgcct tcgccttcca catctgtcc 180
acccctcgca tgtacggctc caaggcccttc atcaagtacg tgtccggcat ccccgactac 240
ttcaagcagt ccctccccga gggcttcacc tgggagcgcga ccaccaccta cgaggacggc 300
ggcttcgtca cggccacca ggacacccctc ctggacggcg actgccttgt gtacaagggtg 360
aagatcctgg gcaacaacctt ccccgccgac ggccccgtga tgcagaacaa ggccggccgc 420
tgggagccct ccaccgagat cgtgtacgag gtggacggcg tgctgcgcgg ccagtcctg 480
atggccctgg agtccccgg cggtcgccac ctgacactgcc acctgcacac cacctaccgc 540
tccaagaagc cgcctccgc cctgaagatg cccggcttcc acttcgagga ccaccgeatc 600
gagatcctgg aggagggtgga gaagggaag tgctacaagc agtacgaggc cgccgtggc 660
cgctactgac acggccccc ctccaagctg ggccacaact gaagctt 707

<210> 40
<211> 231
<212> PRT
<213> Anemonia sulcata

<400> 40
Ala Ser Leu Leu Thr Glu Thr Met Pro Phe Arg Thr Thr Ile Glu Gly
1 5 10 15
Thr Val Asn Gly His Tyr Phe Lys Cys Thr Gly Lys Gly Glu Gly Asn
20 25 30
Pro Leu Glu Gly Thr Gln Glu Met Lys Ile Glu Val Ile Glu Gly Gly
35 40 45
Pro Leu Pro Phe Ala Phe His Ile Leu Ser Thr Ser Cys Met Tyr Gly
50 55 60

Ser Lys Ala Phe Ile Lys Tyr Val Ser Gly Ile Pro Asp Tyr Phe Lys
 65 70 75 80
 Gln Ser Leu Pro Glu Gly Phe Thr Trp Glu Arg Thr Thr Tyr Glu
 85 90 95
 Asp Gly Gly Phe Leu Thr Ala His Gln Asp Thr Ser Leu Asp Gly Asp
 100 105 110
 Cys Leu Val Tyr Lys Val Lys Ile Leu Gly Asn Asn Phe Pro Ala Asp
 115 120 125
 Gly Pro Val Met Gln Asn Lys Ala Gly Arg Trp Glu Pro Ser Thr Glu
 130 135 140
 Ile Val Tyr Glu Val Asp Gly Val Leu Arg Gly Gln Ser Leu Met Ala
 145 150 155 160
 Leu Glu Cys Pro Gly Gly Arg His Leu Thr Cys His Leu His Thr Thr
 165 170 175
 Tyr Arg Ser Lys Lys Pro Ala Ser Ala Leu Lys Met Pro Gly Phe His
 180 185 190
 Phe Glu Asp His Arg Ile Glu Ile Leu Glu Glu Val Glu Lys Gly Lys
 195 200 205
 Cys Tyr Lys Gln Tyr Glu Ala Ala Val Gly Arg Tyr Cys Asp Ala Ala
 210 215 220
 Pro Ser Lys Leu Gly His Asn
 225 230

<210> 41
 <211> 699
 <212> DNA
 <213> Anemonia sulcata

<400> 41
 atggcctcct tcctgaagaa gaccatgccc ttcaagacca ccatcgaggg caccgtgaac 60
 ggccactact tcaagtgcac cggcaaggcc gagggcaacc ctttcgaggg caccaggag 120
 atgaagatcg aggtgatcga gggcgcccc ctgccttcg cttccacat cctgtccacc 180
 tcctgcatgt acggctccaa ggccttcata aagtaacgtgt ccggcatccc cgactacttc 240
 aagcagtcct tccccgaggg cttcacctgg gagcgcacca ccacctaaca ggacggcgcc 300
 ttccctgaccg cccaccagga cacctccctg gacggcgact gcctggtgta caaggtgaag 360
 atccctggca acaacttccc cggcgacggc cccgtatgc agaacaaggc cggccgctgg 420
 gagccctcca ccgagatcgt gtacgaggtg gacggcggtc tgccggcca gtcctgtatg 480
 gccctgaagt gccccggcg cggccacctg acctgcccacc tgccacaccat ctaccgctcc 540
 aagaagcccg cctccgcct gaagatgccc ggctccact tcgaggacca ccgcacatcgag 600
 atcatggagg aggtggagaa gggcaagtgc tacaaggcgt acgaggccgc cgtggccgc 660
 tactgcacg cggcccccctc caagctggc cacaactga 699

<210> 42
 <211> 232
 <212> PRT
 <213> Anemonia sulcata

<400> 42
 Met Ala Ser Phe Leu Lys Lys Thr Met Pro Phe Lys Thr Thr Ile Glu
 1 5 10 15

Gly Thr Val Asn Gly His Tyr Phe Lys Cys Thr Gly Lys Gly Glu Gly
 20 25 30
 Asn Pro Phe Glu Gly Thr Gln Glu Met Lys Ile Glu Val Ile Glu Gly
 35 40 45
 Gly Pro Leu Pro Phe Ala Phe His Ile Leu Ser Thr Ser Cys Met Tyr
 50 55 60
 Gly Ser Lys Ala Phe Ile Lys Tyr Val Ser Gly Ile Pro Asp Tyr Phe
 65 70 75 80
 Lys Gln Ser Phe Pro Glu Gly Phe Thr Trp Glu Arg Thr Thr Tyr
 85 90 95
 Glu Asp Gly Gly Phe Leu Thr Ala His Gln Asp Thr Ser Leu Asp Gly
 100 105 110
 Asp Cys Leu Val Tyr Lys Val Lys Ile Leu Gly Asn Asn Phe Pro Ala
 115 120 125
 Asp Gly Pro Val Met Gln Asn Lys Ala Gly Arg Trp Glu Pro Ser Thr
 130 135 140
 Glu Ile Val Tyr Glu Val Asp Gly Val Leu Arg Gly Gln Ser Leu Met
 145 150 155 160
 Ala Leu Lys Cys Pro Gly Gly Arg His Leu Thr Cys His Leu His Thr
 165 170 175
 Thr Tyr Arg Ser Lys Lys Pro Ala Ser Ala Leu Lys Met Pro Gly Phe
 180 185 190
 His Phe Glu Asp His Arg Ile Glu Ile Met Glu Glu Val Glu Lys Gly
 195 200 205
 Lys Cys Tyr Lys Gln Tyr Glu Ala Ala Val Gly Arg Tyr Cys Asp Ala
 210 215 220
 Ala Pro Ser Lys Leu Gly His Asn
 225 230

<210> 43
 <211> 678
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> hybrid construct

<400> 43
 atgagctgca gcaagaacgt gatcaaggag ttcatgcggc tcaagggtgcg gatggagggc 60
 accgtgaacg gccacgagtt cgagatcaag ggcgaggggcg agggccggcc ctacgagggc 120
 cactgcagcg tgaagctcat ggtgaccaag ggccggcccc tccccttcgc cttcgacatc 180
 ctcagcccccc agtccagta cggcagcaag gtgtacgtga agcacccccc cgacatcccc 240
 gactacaaga agtcagctt ccccgagggc ttcaagtggg agcgggtgtat gaacctcgag 300
 gacggcggcg tggtgaccgt gagccagcac agcagcctca aggacggctg ctcatctac 360
 gaggtgaagt tcatacgccgt gaacttcccc agcgacggcc ccgtgatgca gcggcggacc 420
 cggggctggg aggccagcag cgagcggctc taccggggg acggcgtgt caagggcgac 480
 atccacatgg ccctccggct cgagggcggc ggccactacc tcgtggagtt caagagcatc 540
 tacatggcca agaagcccggt gcagctcccc ggctactact acgtggacag caagctcgac 600
 atcaccagcc acaacgagga ctacaccatc gtggagcagt acgagcggac cgagggccgg 660
 caccacctct tcctctga 678

<210> 44
<211> 225
<212> PRT
<213> Artificial Sequence

<220>
<223> hybrid construct

<400> 44
Met Ser Cys Ser Lys Asn Val Ile Lys Glu Phe Met Arg Phe Lys Val
1 5 10 15
Arg Met Glu Gly Thr Val Asn Gly His Glu Phe Glu Ile Lys Gly Glu
20 25 30
Gly Glu Gly Arg Pro Tyr Glu Gly His Cys Ser Val Lys Leu Met Val
35 40 45
Thr Lys Gly Gly Pro Leu Pro Phe Ala Phe Asp Ile Leu Ser Pro Gln
50 55 60
Phe Gln Tyr Gly Ser Lys Val Tyr Val Lys His Pro Ala Asp Ile Pro
65 70 75 80
Asp Tyr Lys Lys Leu Ser Phe Pro Glu Gly Phe Lys Trp Glu Arg Val
85 90 95
Met Asn Phe Glu Asp Gly Gly Val Val Thr Val Ser Gln Asp Ser Ser
100 105 110
Leu Lys Asp Gly Cys Phe Ile Tyr Glu Val Lys Phe Ile Gly Val Asn
115 120 125
Phe Pro Ser Asp Gly Pro Val Met Gln Arg Arg Thr Arg Gly Trp Glu
130 135 140
Ala Ser Ser Glu Arg Leu Tyr Pro Arg Asp Gly Val Leu Lys Gly Asp
145 150 155 160
Ile His Met Ala Leu Arg Leu Glu Gly Gly His Tyr Leu Val Glu
165 170 175
Phe Lys Ser Ile Tyr Met Ala Lys Lys Pro Val Gln Leu Pro Gly Tyr
180 185 190
Tyr Tyr Val Asp Ser Lys Leu Asp Ile Thr Ser His Asn Glu Asp Tyr
195 200 205
Thr Ile Val Glu Gln Tyr Glu Arg Thr Glu Gly Arg His His Leu Phe
210 215 220
Leu
225

<210> 45
<211> 898
<212> DNA
<213> Discosoma species

<400> 45
gtcctcccaa gcagtggtat caacgcagag tacggggag tttcagccag tgacggtcag 60
tgacagggtg agccacttgg tataccaaca aaatgagggtc ttccaagaat gttatcaagg 120
agttcatgag gtttaagggtt cgcatggaag gaacggtcaa tgggcacgag tttgaaatag 180
aaggcgaagg agaggggagg ccatacgaag gccacaatac cgtaaagctt aaggtAACCA 240

